

### **REMARKS**

Claims 1-55 are all the claims presently pending in the application.

Claims 1, 12, 23, 34, 53, and 55 stand rejected under 35 U. S. C. 112, second paragraph as being indefinite. The claims have been amended above to overcome this rejection. Specifically, the claims have been amended to define "*an object of said subject's attention*". Thus, the Applicant submits that the claims are not indefinite, particularly when taken together with the specification, the other claims and the drawings.

It is noted that the claims have been amended solely to more particularly point out Applicant's invention for the Examiner, and not for distinguishing over the prior art, narrowing the claim in view of the prior art, or for statutory requirements directed to patentability.

It is further noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached pages are captioned "**Version with markings to show changes made**".

Claims 1-55 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ball et al. (U.S. Patent No. 6,212,502) (hereinafter "Ball") and Tognazzini et al. (U.S. Patent No. 5,886,683) (hereinafter "Tognazzini").

This rejection is respectfully traversed in view of the following discussion.

### **I. THE CLAIMED INVENTION**

The claimed invention is directed to a system for unobtrusively detecting a subject's level of interest in media content. The invention was discussed in detail in the Amendment of December 31, 2001, and, for convenience, Applicant refers the Examiner thereto.

The inventive system includes a mechanism for detecting an object of the subject's attention, a mechanism for measuring a subject's relative arousal level, and a mechanism for

combining information regarding the subject's arousal level and attention to infer a level of interest.

A feature of the present invention is that the detector operates on a real time basis.

As explained in the Amendment filed December 31, 2001, conventional systems for measuring a subject's interest often estimate a mental decision by monitoring a subject's gaze direction and EEG to detect when a subject is looking at a visual target. Other systems remotely determine a subject's emotional state by broadcasting a waveform of predetermined frequency and energy at the subject, and analyzing the emitted energy to determine physiological parameters (e.g., respiration, pulse, blood pressure, etc.). However, these systems cannot measure a subject's interest in real-time by passively observing the subject.

The claimed invention, on the other hand, uses a subject's arousal level and attention to infer a level of interest. Therefore, the claimed system is able to reliably assess the subject's interest level in real-time by passively observing the subject.

Indeed, such features are clearly not taught or suggested by the cited references.

## II. THE PRIOR ART REFERENCES

The Examiner asserts that:

*[regarding claims 1, 12, 23, 34, 45, 53, 54, and 55] Ball et al show unobtrusive system for detecting a subject's level of arousal and interest (column 4 lines 55-68, column 5 lines 1-5, column 8 lines 43-55, column 9 lines 11-30). Ball et al do not specifically show what the subject is 'attending' but do mention detecting attentiveness. Furthermore, Tognazzini et al do show detecting what a subject is gazing at or 'attending to' (column 5 lines 54-68, column 6 lines 1-25, column 6 lines 1-25, column 8 lines 5-19) to determine attentiveness to media images and objects on a network. The web browser information (column 11 lines 15-45) are all examples of media. It would have been obvious to a person with ordinary skill in the art to include the gaze detection feature of Tognazzini et al in the interest and arousal detection system of Ball et al, because it would provide an efficient way to detect attentiveness.*

However, Applicant respectfully disagrees.

Specifically, while the Examiner asserts Ball teaches detecting attentiveness and that Tognazzini discloses detecting what a subject is gazing at, neither Ball and Tognazzini, even assuming (arguendo) that their limitations would have been combined, teaches or suggests the inventive method of the invention.

While the Examiner asserts Ball teaches detecting attentiveness, the Examiner admits “Ball et al do not specifically show what the subject is ‘attending’ but do mention detecting attentiveness” (e.g., see page 3, item 5 of the Office Action). In Ball, the object is commands to ascertain emotion and personality of a subject based on spoken words. Ball discloses “[w]e have modeled wording choice more deeply than other aspects of the emotion and personality” (e.g., see column 10, lines 5-8 of Ball). Thus, Ball is not for detecting the object of a subject's attention. In Ball, the object on a screen is already known and provided.

Additionally, Ball is not teaching that the detecting takes place “*in real-time*”, as defined by the independent claims.

Also, in Ball there is no teaching of the measurement of the subjects’s facial gestures, as defined for example in dependent claim 8. Additionally, Ball is not measuring the subject’s head gestures, as in dependent claim 9.

Tognazzini, in contrast to the present invention, also fails to disclose or suggest interpreting facial expressions or analyzing facial expressions. Tognazzini merely discloses a method “*which makes use of a display device and a gaze-tracking device. The gaze-tracking device determines the user’s gaze position on the display device....It then monitors the gaze position to determine the user’s level of interest in the plurality of categorized information displayed on the display device*” (e.g., see Tognazzini, column 5, lines 62-67 and column 6, line 1). Thus, Tognazzini is only teaching a conventional device similar to those discussed in the specification (e.g., see page 10, lines 7-21 of the specification).

Further, Tognazzini also does not teach “means for detecting, in real time, an object of said subject’s attention”, as defined by independent claims 1, 12, 23, 34, 45, 53, 54, and 55.

Hence, turning to the clear language of the claims, as defined by independent claim 1 (and

substantially similarly by independent claims 12, 23, 34, 45, 53, 54, and 55) there is no teaching or suggestion of “[a] system for unobtrusively detecting a subject's level of interest in media content, comprising:

*means for detecting, in real time, an object of said subject's attention;*

*means for measuring a subject's relative arousal level; and*

*means for combining information regarding said subject's arousal level and attention to infer a level of interest.*

Thus, independent claims 1, 12, 23, 34, 45, 53, 54, and 55 and dependent claims 2-11, 13-22, 24-44, and 46-52 are neither anticipated nor for that matter rendered obvious by Ball in view of (arguendo) Tognazzini.

For the reasons stated above, the claimed invention is fully patentable over the cited references.

Further, the other prior art of record has been reviewed, but it too, even in combination with Ball and Tognazzini, fails to teach or suggest the claimed invention.

### **III. FORMAL MATTERS AND CONCLUSION**

In view of the foregoing, Applicant submits that claims 1-55, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

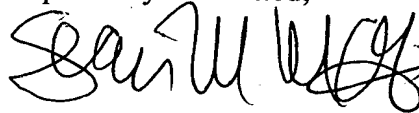
Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

09/257,208  
AM9-98-093

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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 09-0456.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Sean M. McGinn", with a stylized flourish at the end.

Sean M. McGinn, Esq.  
Reg. No. 34,386

Date:

7/12/02

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

**The claims have been amended as follows:**

1 1. (Amended) A system for unobtrusively detecting a subject's level of interest in media  
2 content, comprising:

3 means for detecting, in real time, [to what a subject is attending] an object of said  
4 subject's attention;

5 means for measuring a subject's relative arousal level; and

6 means for combining information regarding said subject's arousal level and attention to  
7 infer a level of interest.

1 12. (Amended) A system for unobtrusively detecting an object of a subject's interest in media  
2 content, comprising:

3 means for detecting, in real time, [the] an object [to which the subject is attending] of said  
4 subject's attention;

5 means for measuring the subject's relative arousal level; and

6 means for combining information regarding said subject's arousal level and attention to  
7 infer the object of interest.

1 23. (Amended) A method of unobtrusively detecting a subject's level of interest in  
2 media content, comprising:

3 detecting [to what], in real time, a subject [is attending] of said subject's attention;

4 measuring a subject's relative arousal level; and

5 combining information regarding said subject's arousal level and attention to infer a  
6 level of interest.

1 34. (Amended) A method of unobtrusively detecting the object of a subject's interest  
2 in media content, comprising:

3 detecting the object, in real time, [the subject is attending] of said subject's attention;  
4 measuring the subject's relative arousal level; and  
5 combining information regarding the subject's arousal level and attention to infer the  
6 object of interest.

1 45. (Amended) A method for detecting a person's level of interest in media content,  
2 comprising:

3 assessing, in real time, whether a person is attending to the media content, to produce first  
4 data;

5 assessing a person's relative arousal level with regard to the media content, to produce  
6 second data;

7 combining said first and second data to infer a level of interest the person has in said  
8 media content; and

9 communicating said level of interest as feedback about the media content to a  
10 manager of said media content.

1 53. (Amended) A signal-bearing medium tangibly embodying a program of machine-readable  
2 instructions executable by a digital processing apparatus to perform a method for  
3 computer-implemented unobtrusive detection of a subject's level of interest in media content,  
4 said method comprising:

5 detecting, in real time, [to what a subject is attending] an object of said subject's attention;  
6 measuring a subject's relative arousal level; and  
7 combining information regarding said subject's arousal level and attention to infer a  
8 level of interest.

1 54. (Amended) A signal-bearing medium tangibly embodying a program of machine-readable  
2 instructions executable by a digital processing apparatus to perform a method for

3 computer-implemented unobtrusive detection of a subject's level of interest in media content,  
4 said method comprising:

5 assessing, in real time, whether a subject is attending to the media content, to produce  
6 first data;

7 assessing a subject's relative arousal level with regard to the media content, to produce  
8 second data;

9 combining said first and second data to infer a level of interest the subject has in said  
10 media content; and

11 communicating said level of interest as feedback about the media content to a  
12 manager of said media content.

1 55. (Amended) A system for unobtrusively measuring a subject's interest in media content,  
2 comprising:

3 a detector for detecting, in real time, an object of a subject's attention;

4 a measuring device which measures a subject's arousal level; and

5 an inference engine which infers subject's interest level based on a said arousal level.